

1 14. The method of claim 13 wherein the pre-associated state to

2 a pending insert state transition is accomplished by:

3 (a) marking the element to be inserted as being pre-

4 associated to the data structure;

5 (b) navigating the data structure to an insertion point;

6 (c) creating links between the element to be inserted and

7 the data structure at the insertion point, the links

8 created being visible only to the insertion operation;

9 and

10 (d) marking the element as being pending insert.

1 15. The method of claim 14 wherein the pending insert state to

2 a valid state transition is accomplished by:

3 (a) creating instructions for making the created links

4 visible to all operations; and

5 (b) creating instructions for making existing links at the

6 insertion point invisible to all operations.

1 16. The method of claim 15 wherein the step of performing the

2 second set of operation tasks further comprises executing the

3 created instructions including marking the element as valid.

1 17. A method of deleting an element into a linked data  
2 structure comprising the steps of:  
3 (a) performing a first set of operation tasks in a first  
4 phase, the first set of operation tasks operable to  
5 effect a first set of element state transitions  
6 including a valid state to a pending delete state  
7 transition;  
8 (b) developing a second set of operation tasks, the second  
9 set of operation tasks operable to effect a second set  
10 of element state transitions including a pending  
11 delete state to an invalid state transition;  
12 (c) performing the second set of operation tasks in a  
13 second phase.

1 18. The method of claim 17 wherein the valid state to a pending  
2 delete state transition is accomplished by:  
3 (a) navigating the data structure to a deletion point;  
4 (b) creating links at the deletion point visible only to  
5 the deletion operation; and  
6 (c) marking the element to be deleted as pending delete.

1 19. The method of claim 18 wherein the pending delete state to  
2 an invalid state transition is accomplished by:

- 3 (a) creating instructions for making the created links  
4 visible to all operations; and  
5 (b) making existing links at the deletion point invisible  
6 to all operations.

1 20. The method of claim 19 wherein the step of performing the  
2 second set of operation tasks further comprises executing the  
3 instructions including marking the element to be deleted as  
4 invalid.